WHAT IS CLAIMED IS:

1. A process for fabricating a shape memory alloy film, comprising:

inserting a substrate in an enclosure;

introducing a source of a shape memory alloy other than a Ni:Ti-based alloy into the enclosure;

purging the enclosure such that substantially no reaction occurs between the shape memory alloy and the contaminants remaining within the enclosure after purging;

introducing an inert gas such that the pressure within the enclosure is raised;

setting an initial temperature of the source;

depositing a film of shape memory alloy from the source onto the substrate;

controlling the temperature of the source such that the composition of the film has a compositional gradient through at least a portion of the thickness of the film, wherein the film is capable of exhibiting a two-way shape memory effect.

2. The process of claim 1, wherein the substrate is one of a sacrificial scaffold structure or a removable scaffold structure and further comprising a step of eliminating the scaffold structure such that the film has a three-dimensional structure.

3. The process of claim 1, wherein purging the enclosure includes evacuating the enclosure, wherein the vacuum pressure during evacuating is selected in a range greater than 10^{-8} Torr and no greater than 10^{-3} Torr.

4. The process of claim 3, further comprising selecting a shape memory alloy for the source from the group of shape memory alloys consisting of Au:Cd, Fe:Mn:Si, Cu:Zn:Al, Cu:Ni:Al and higher order alloys based thereon.

5. The process of claim 4, wherein the shape memory alloy is of Au:Cd or is a higher order alloy based on Au:Cd.

6. The process of claim 4, wherein the shape memory alloy is of Fe:Mn:Si or is a higher order alloy based on Fe:Mn:Si, and the range of vacuum pressure is no greater than 10^{-5} Torr.

7. The process of claim 4, wherein the shape memory alloy is of Cu:Zn:Al or is a higher order alloy based on Cu:Zn:Al, and the range of vacuum pressure is no greater than 10^{-6} Torr.

8. The process of claim 4, wherein the shape memory alloy is of Cu:Ni:Al or is a higher order alloy based on Cu:Ni:Al, and the range of vacuum pressure is no greater than 10^{-6} Torr.

9. The process of claim 3, wherein the step of controlling the temperature increases the temperature of the source gradually over time during deposition of the film.

10. The process of claim 3, wherein the distance between the source and the substrate is greater than 2 cm and no greater than 24 cm.

11. The process of claim 3, wherein the substrate is tubular, further comprising a step of rotationally adjusting the orientation of the substrate such that the film thickness is radially uniform about the rotational axis.

12. A shape memory effect actuator, comprising:

a film comprising a shape memory alloy having substantially no titanium, the film having a film thickness and a compositional gradient through at least a portion

of the film thickness such that a phase change occurs above a phase change temperature, wherein the phase change activates a two-way shape memory effect.

13. The actuator of claim 12, wherein the actuator is a bubble membrane, the bubble membrane extending when heated above the phase change temperature and flattening when cooled below the phase change temperature.

14. The actuator of claim 12, wherein the film comprises at least one linear element such that the at least one linear element is capable of activating a two-way shape memory effect.

15. A shape memory effect actuator, comprising:

a film having a three-dimensional shape and comprised of a shape memory alloy, at least an operable portion of the film being capable of a two-way shape memory effect, the operable portion of the film having a uniform film thickness and a compositional gradient through at least a portion of the uniform film thickness such that a phase change occurs at a phase change temperature, and the phase change is capable of activating a two-way shape memory effect.

16. The actuator of claim 15, wherein the three-dimensional shape of the film comprises a fenestrated tubular element.

17. The actuator of claim 15, wherein the three-dimensional shape of the film comprises a porous foam.

18. The actuator of claim 15, wherein the three-dimensional shape of the film comprises a dimpled spherical structure.

19. A film of shape memory alloy having substantially no titanium and comprising a compositional gradient through at least a portion of the film such that a phase change occurs above room temperature, wherein the phase change is capable of activating a two-way shape memory effect.

20. The film of claim 17, wherein the shape memory alloy is selected from one of Au:Cd, Fe:Mn:Si, Cu:Zn:Al, Cu:Ni:Al and higher order alloys based thereon.